

Region:	Lombardia, Emilia-Romagna, Piemonte, Veneto, Toscana, Campania, Puglia						Archetype code: COMM_DEPT_ 2010-2023_CDE_ITA	
Building category:	Commercial buildings - Department stores and shopping mall							
Period of construction:	2010-2023							
Climatic zone:	C-D-E		Number of records:		18			
Description (the codes associated with walls and slabs refer to the structures described in UNI/TR 11552:2014): External walls: double concrete panel (7 cm + 7 cm) with interposed insulation layer (cod. MPF03). Slabs: concrete screed (26 cm) plus insulation layer (8 cm) on a slightly ventilated gap (4 cm) (-)							Data sources: Project documentation (82%) Standards (10%) APE (8%)	
	Data	Symbol	Unit of measure	Mean value	Standard deviation	Q1 (first quartile)	Median value	Q3 (third quartile)
BUILDING GEOMETRY	Number of floors	n_f	-	1.00	0.0	1.00	1.00	1.00
	Gross height	H_g	m	4.50	0.0	4.50	4.50	4.50
	Footprint area	$A_{\text{footprint}}$	m²	1762.86	158.23	1613.92	1747.84	1885.62
	Heated gross floor area	$A_{H,g}$	m²	1762.86	158.23	1613.92	1747.84	1885.62
	Heated net floor area	$A_{H,n}$	m²	1577.38	231.35	1324.65	1678.20	1769.10
	Heated gross volume	$V_{H,g}$	m³	7932.34	712.32	7260.97	7865.20	8485.33
	Heated net volume	$V_{H,n}$	m³	5993.90	879.19	5033.67	6376.40	6722.58
	Compactness ratio	$A_{\text{env}}/V_{H,g}$	m⁻¹	0.56	0.04	0.55	0.55	0.55
	WWR – North orientation	WWR_N	-	0.35	0.15	0.27	0.31	0.43
	WWR – South orientation	WWR_S	-	0.52	0.25	0.29	0.46	0.81
	WWR – East orientation	WWR_E	-	0.43	0.25	0.27	0.30	0.67
	WWR – West orientation	WWR_W	-	0.47	0.16	0.32	0.47	0.59
	Window to useful floor area ratio	A_{wi}/A_{use}	-	0.18	0.04	0.16	0.19	0.20
	ENVELOPE	Roof type	Prefabricated reinforced concrete slab high insulation: 100%					
U-value of the roof		$U_{\text{fl;up}}$	W/(m²·K)	0.22	0.04	0.20	0.20	0.28
External walls type		Double concrete panel with interposed insulation layer: 100%						
U-value of the wall		U_{wl}	W/(m²·K)	0.28	0.05	0.25	0.26	0.35
Slab on ground floor type		Reinforced concrete floor on the crawl space with interposed insulation layer: 100%						
U-value of the floor		$U_{\text{fl;lw}}$	W/(m²·K)	0.31	0.021	0.30	0.31	0.34
Windows type		Double glazing, aluminum frame with thermal break: 100%						
U-value of the windows		U_W	W/(m²·K)	1.36	0.15	1.30	1.30	1.30
GAINS and VENTILATION	Shading system type	Roller blinds: 100%						
	Occupancy density	O_C	person/m²	0.01	0.00	0.01	0.01	0.01
	Lighting power density	W_L	W/m²	11.93	5.23	7.61	10.00	18.52
	Equipment power density*	W_A	W/m²	UNI EN 16798-1 – A.8.3				
	Type of ventilation	Mechanical: 100%						
	Air exchange rate	n	h⁻¹	0.44	0.00	0.44	0.44	0.44
THERMAL SYSTEMS	Heating system type	Autonomous: 100%						
	Heating generator	Air source heat pump: 100%						
	Daily operating time of the heating system *	t_H	h	12.00	0.00	12.00	12.00	12.00
	Energy carrier	Electricity: 100%						
	Heating emission sub-system	Mechanical ventilation vents: 100%						
	Cooling system type	Air-cooled chiller: 100%						
	Daily operating time of the cooling system *	t_C	h	12.00	0.00	12.00	12.00	12.00
	Cooling emission sub-system	Mechanical ventilation vents: 100%						
	DHW system type	Autonomous - detached from heating: 100%						
	DHW generator	Electric heat pump: 77%, Electric boiler: 23%						
	* These values were not available in the considered sources, and are thus derived from UNI EN Standards							

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Numerical variables – GEOMETRY

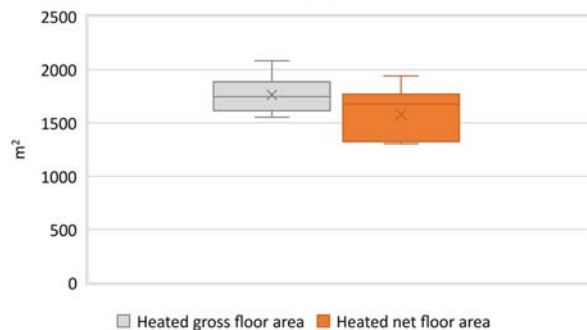
NUMBER OF FLOORS



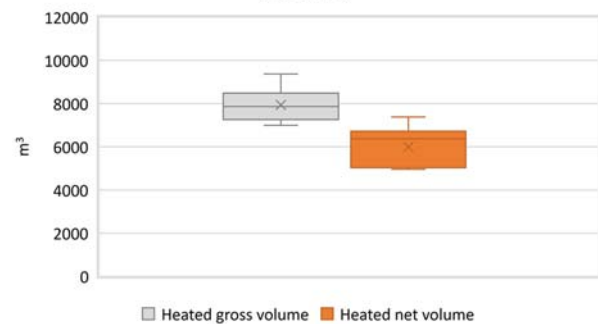
GROSS HEIGHT



AREA



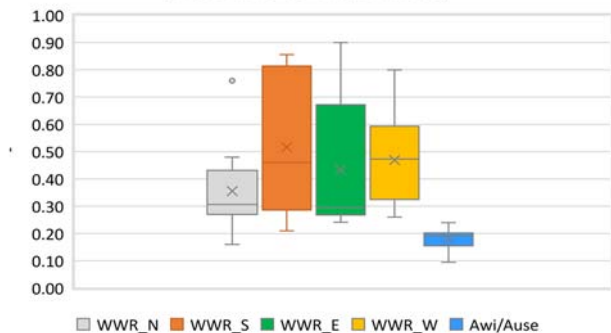
VOLUME



COMPACTNESS RATIO

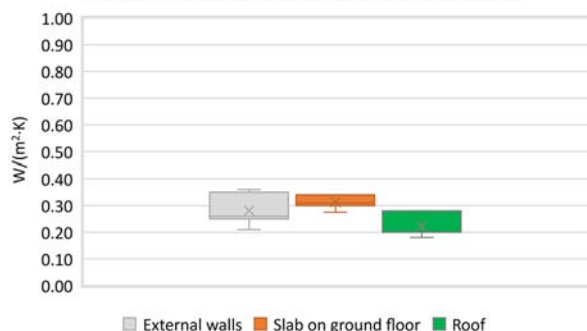


WINDOWS TO WALL RATIO

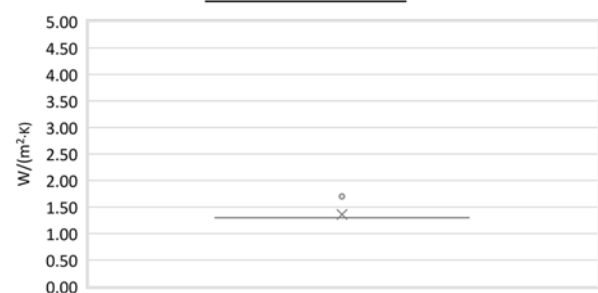


Numerical variables – ENVELOPE

OPAQUE BUILDING COMPONENTS U-VALUE



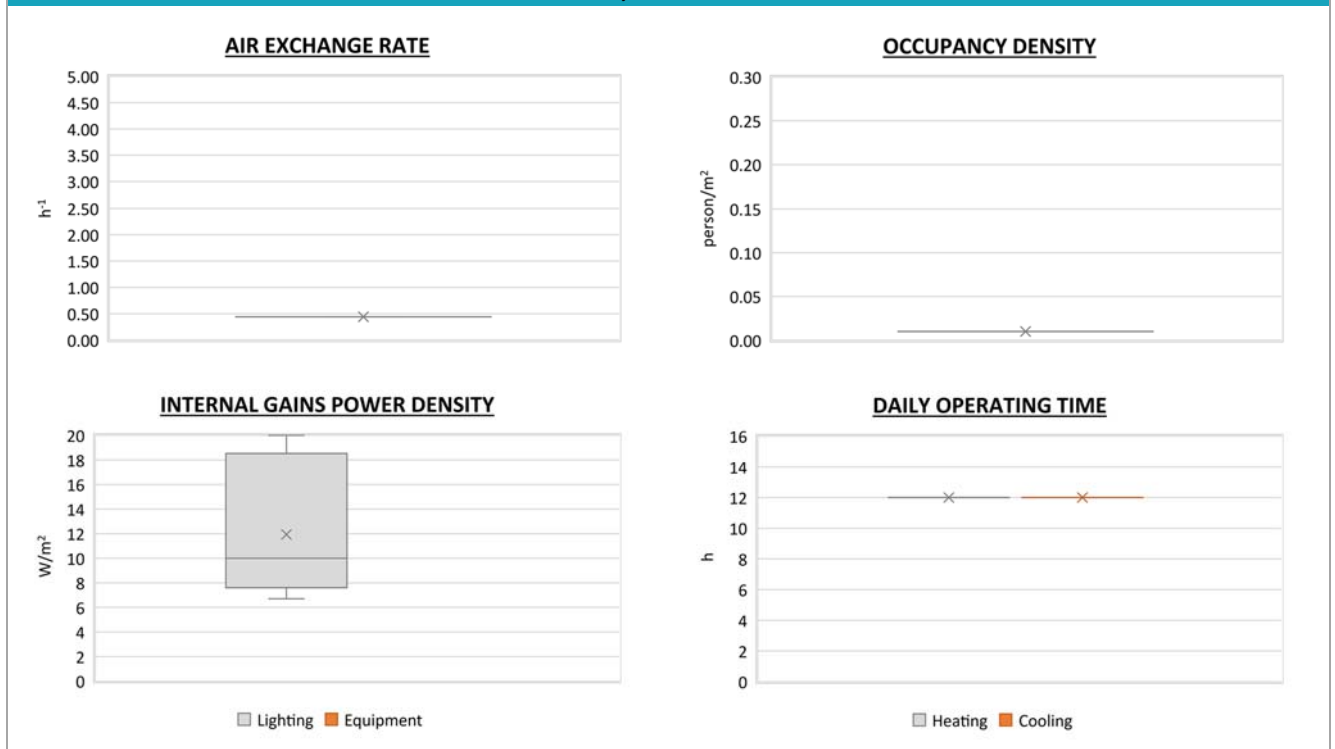
WINDOWS U-VALUE



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ADDITIONAL DATA								
	Data	Symbol	Unit of measure	Mean value	Standard deviation	Q1 (first quartile)	Median value	Q3 (third quartile)
THERMAL SYSTEMS	Heating efficiency or <i>COP</i>	$\eta_{H,gen}$ or $COP_{H,gen}$	-	This value has to be retrieved from suitable datasheets				
	Total heating power	$P_{H,gen}$	kW	97.77	32.69	87.10	96.95	107.45
	Cooling efficiency or <i>EER</i>	$\eta_{C,gen}$ or $EER_{C,gen}$	-	This value has to be retrieved from suitable datasheets				
	Total cooling power	$P_{C,gen}$	kW	90.41	16.89	87.10	88.50	95.42
	Temperature of DHW	θ_w	°C	40.00	0.00	40.00	40.00	40.00
	DHW system power	$P_{W,gen}$	kW	2.05	1.69	0.90	1.32	2.90

Numerical variables – GAINS, VENTILATION and SYSTEMS USAGE



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Additional data: other numerical variables that are not included in the archetype

